

WHAT IS CLAIMED IS:

1. A pattern detecting method comprising:

selecting, from among a group of device patterns included in a region near a target pattern in a device forming region, as an alignment pattern in the device forming region, patterns whose barycenter positions in a first direction are not changed even if patterns are deformed by bringing the patterns close to each other or by a difference of density of the patterns at the time of pattern forming,

setting a barycenter position of the alignment pattern in the first direction as alignment reference coordinates, and

detecting the target pattern based on the alignment reference coordinates.

2. The pattern detecting method according to claim 1, wherein patterns which have the same distances from those which are adjacent on both sides in the first direction are selected as the alignment patterns.

3. The pattern detecting method according to claim 1, wherein from among patterns which are adjacent in the first direction, those which are separated from each other at such a distance that the patterns are not deformed by bringing the patterns close to each other and by a difference of density

of the patterns are selected as the alignment patterns.

4. The pattern detecting method according to claim 1, further detecting the alignment pattern in the device forming region based on a reference position provided outside the device forming region after the alignment reference coordinates are determined and before the target pattern is detected based on the alignment reference coordinates.

10 5. A pattern detecting method comprising:
selecting, from among a group of device patterns included in a region near a target pattern in a device forming region, as an alignment pattern in the device forming region, patterns whose barycenter positions in first and second
15 directions are not changed even if patterns are deformed by bringing the patterns close to each other or by a difference of density of the patterns at the time of pattern forming,
setting a barycenter position of the alignment pattern in the first and second directions as alignment reference
20 coordinates, and
detecting the target pattern based on the alignment reference coordinates.

6. The pattern detecting method according to claim 5,
25 wherein patterns which have the same distances from those

which are adjacent on both sides in the first or second direction are selected as the alignment patterns.

7. The pattern detecting method according to claim 5,
5 wherein from among patterns which are adjacent in the first or second direction, those which are separated from each other at such a distance that the patterns are not deformed by bringing the patterns close to each other and by a difference of density of the patterns are selected as the
10 alignment patterns.

8. The pattern detecting method according to claim 5,
further detecting the alignment pattern in the device forming region based on a reference position provided outside the
15 device forming region after the alignment reference coordinates are determined and before the target pattern is detected based on the alignment reference coordinates.

9. A pattern checking method comprising:
20 selecting, from among a group of device patterns included in a region near a target pattern in a device forming region, as an alignment pattern in the device forming region, patterns whose barycenter positions in a first direction are not changed even if patterns are deformed by bringing
25 the patterns close to each other or by a difference of density

of the patterns at the time of pattern forming,

setting a barycenter position of the alignment pattern
in the first direction as alignment reference coordinates,

detecting the target pattern based on the alignment
5 reference coordinates, and

checking the detected target pattern.

10. A pattern correcting or processing method comprising:

selecting, from among a group of device patterns
10 included in a region near a target pattern in a device forming
region, as an alignment pattern in the device forming region,
patterns whose barycenter positions in a first direction
are not changed even if patterns are deformed by bringing
the patterns close to each other or by a difference of density
15 of the patterns at the time of pattern forming,

setting a barycenter position of the alignment pattern
in the first direction as alignment reference coordinates,

detecting the target pattern based on the alignment
reference coordinates, and

20 correcting or processing the detected target pattern.

11. A pattern detecting device comprising:

a alignment reference setting unit which selects, from
among a group of device patterns included in a region near
25 a target pattern in a device forming region, as an alignment

pattern in the device forming region, patterns whose barycenter positions in a first direction are not changed even if patterns are deformed by bringing the patterns close to each other or by a difference of density of the patterns
5 at the time of pattern forming, and sets a barycenter position of the alignment pattern in the first direction as alignment reference coordinates, and

a target pattern detecting unit which detects the target pattern based on the alignment reference coordinates.

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12. The pattern detecting device according to claim 11, wherein patterns which have the same distances from those which are adjacent on both sides in the first direction are selected as the alignment patterns.

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13. The pattern detecting device according to claim 11, wherein from among patterns which are adjacent in the first direction, those which are separated from each other at such a distance that the patterns are not deformed by bringing
20 the patterns close to each other and by a difference of density of the patterns are selected as the alignment patterns.

14. A pattern detecting device comprising:

a alignment reference setting unit which selects, from
25 among a group of device patterns included in a region near

a target pattern in a device forming region, as an alignment pattern in the device forming region, patterns whose barycenter positions in first and second directions are not changed even if patterns are deformed by bringing the patterns close to each other or by a difference of density of the patterns at the time of pattern forming, and sets a barycenter position of the alignment pattern in the first and second directions as alignment reference coordinates, and

10 a target pattern detecting unit which detects the target pattern based on the alignment reference coordinates.

15 15. The pattern detecting device according to claim 14, wherein patterns which have the same distances from those which are adjacent on both sides in the first or second direction are selected as the alignment patterns.

20 16. The pattern detecting device according to claim 14, wherein from among patterns which are adjacent in the first or second direction, those which are separated from each other at such a distance that the patterns are not deformed by bringing the patterns close to each other and by a difference of density of the patterns are selected as the alignment patterns.

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17. A pattern checking device comprising:

a alignment reference setting unit which selects, from among a group of device patterns included in a region near a target pattern in a device forming region, as an alignment pattern in the device forming region, patterns whose barycenter positions in a first direction are not changed even if patterns are deformed by bringing the patterns close to each other or by a difference of density of the patterns at the time of pattern forming, and sets a barycenter position of the alignment pattern in the first direction as alignment reference coordinates,

a target pattern detecting unit which detects the target pattern based on the alignment reference coordinates, and

a checking unit which checks the detected target pattern.

18. A pattern correcting or processing device comprising:

a alignment reference setting unit which selects, from among a group of device patterns included in a region near a target pattern in a device forming region, as an alignment pattern in the device forming region, patterns whose barycenter positions in a first direction are not changed even if patterns are deformed by bringing the patterns close to each other or by a difference of density of the patterns

at the time of pattern forming, and sets a barycenter position of the alignment pattern in the first direction as alignment reference coordinates,

a target pattern detecting unit which detects the target pattern based on the alignment reference coordinates, and

a correcting/processing unit which corrects or processes the detected target pattern.

10 19. A computer program containing instructions which when executed on a computer causes the computer to perform the steps of:

selecting, from among a group of device patterns included in a region near a target pattern in a device forming region, as an alignment pattern in the device forming region, patterns whose barycenter positions in a first direction are not changed even if patterns are deformed by bringing the patterns close to each other or by a difference of density of the patterns at the time of pattern forming, and setting
15 a barycenter position of the alignment pattern in the first direction as alignment reference coordinates, and

detecting the target pattern based on the alignment reference coordinates.

25 20. A computer program containing instructions which when

executed on a computer causes the computer to perform the steps of:

selecting, from among a group of device patterns included in a region near a target pattern in a device forming region, as an alignment pattern in the device forming region, patterns whose barycenter positions in first and second directions are not changed even if patterns are deformed by bringing the patterns close to each other or by a difference of density of the patterns at the time of pattern forming, and setting a barycenter position of the alignment pattern in the first and second directions as alignment reference coordinates, and

detecting the target pattern based on the alignment reference coordinates.

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